Reliability Fuzzy Clustering Algorithm for Wellness of Chronic Kidney Disease Patients

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Abstract:
Fuzzy clustering is one of the unsupervised machine learning techniques based knowledge of data analysis that automated or semi-automated analytical model building. By gleaning insights from the data, the fuzzy clustering can learn from data, identify patterns and make decisions with minimal human intervention. However, it cannot simply study in detail regarding the quality of data particularly knowledge of human being. Therefore, the implementation of z-numbers is taken into consideration, where it has more authority to describe the knowledge of human being and extensively used in uncertain information development. Thus, the objective of this paper is to propose a reliable fuzzy clustering algorithm using z-numbers. This model will demonstrate the capability to handle the knowledge of human being and uncertain information in evaluating the wellness of chronic kidney disease (CKD) patients. This proposed algorithm could support to improve the overall health of CKD patients through a variety of indicators such as physical functioning, mental health, vitality, and social functioning. As a consequence, this research will present the idea in developing to design robust and reliable fuzzy clustering particularly in dealing with knowledge of human being.

Keywords : Intuitive Vectorial Centroid (IVC); Fuzzy Analytic Hierarchy Process (FAHP); Analytic Hierarchy

References

1. Bishop CM. Pattern Recognition and Machine Learning (Information Science and Statistics), 1st edn. 2006. corr. 2nd printing edn. Mach Learn. 2006;

2. Friedman HJ. Data mining and statistics: What's the connection? Comput Sci Stat. 1998;

3. Balakrishnan S, Narayanaswamy R, Savarimuthu N, Samikannu R. Svm ranking with backward search for feature selection in type II diabetes databases. In: Conference Proceedings - IEEE International Conference on Systems, Man and Cybernetics. 2008.

4. Kumar N, Khatri S. Implementing WEKA for medical data classification and early disease prediction. In: 3rd IEEE International Conference on. 2017.

5. P B T, R P. Detect Breast Cancer using Fuzzy C means Techniques in Wisconsin Prognostic Breast Cancer (WPBC) Data Sets. Int J Comput Appl Technol Res. 2013;